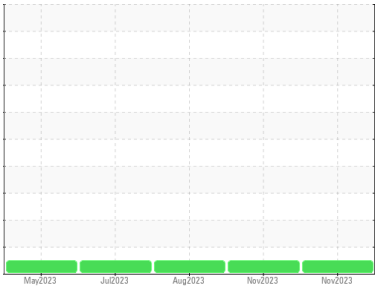
OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL

Machine Id
101-LYO-901
Component
Hydraulic System
Fluid
NAVI-GUARD PREMIUM AW-32 HYDRAULIC (--- LTR)

DIAGNOSIS

Recommendation
Resample at the next service interval to monitor.

Wear
All component wear rates are normal.

Contamination
MPC (Membrane Patch Colorimetry) test indicates acceptable levels of varnish present. The system cleanliness is acceptable for your target ISO 4406 cleanliness code. The system and fluid cleanliness is acceptable.

Fluid Condition
The AN level is acceptable for this fluid. Linear Sweep Voltammetry (RULER – ASTM D6971) testing indicates normal levels of anti-oxidants present in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**WC0846258**	WC0846275	WC0789083
Sample Date		Client Info		**15 Nov 2023**	09 Nov 2023	09 Aug 2023
Machine Age	yrs	Client Info		**0**	0	0
Oil Age	yrs	Client Info		**0**	0	0
Oil Changed		Client Info		**N/A**	N/A	N/A
Sample Status				**NORMAL**	---	NORMAL

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>20	**0**	0	0
Chromium	ppm	ASTM D5185m	>20	**0**	0	0
Nickel	ppm	ASTM D5185m	>20	**0**	0	0
Titanium	ppm	ASTM D5185m		**0**	0	0
Silver	ppm	ASTM D5185m		**0**	0	0
Aluminum	ppm	ASTM D5185m	>20	**<1**	0	0
Lead	ppm	ASTM D5185m	>20	**0**	0	0
Copper	ppm	ASTM D5185m	>20	**<1**	0	<1
Tin	ppm	ASTM D5185m	>20	**0**	0	0
Vanadium	ppm	ASTM D5185m		**0**	0	<1
Cadmium	ppm	ASTM D5185m		**0**	0	0

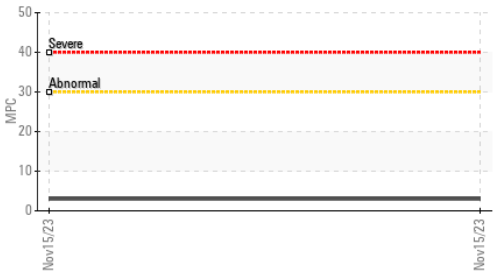
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m		**<1**	<1	<1
Barium	ppm	ASTM D5185m		**7**	0	0
Molybdenum	ppm	ASTM D5185m		**2**	0	2
Manganese	ppm	ASTM D5185m		**0**	0	0
Magnesium	ppm	ASTM D5185m		**12**	6	16
Calcium	ppm	ASTM D5185m		**115**	▲ 72	135
Phosphorus	ppm	ASTM D5185m		**280**	310	285
Zinc	ppm	ASTM D5185m		**329**	435	354
Sulfur	ppm	ASTM D5185m		**3910**	▲ 2333	4317

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>15	**<1**	0	<1
Sodium	ppm	ASTM D5185m		**0**	1	<1
Potassium	ppm	ASTM D5185m	>20	**<1**	0	<1
Water	%	ASTM D6304	>0.05	**0.006**	---	---
ppm Water	ppm	ASTM D6304	>500	**61.8**	---	---

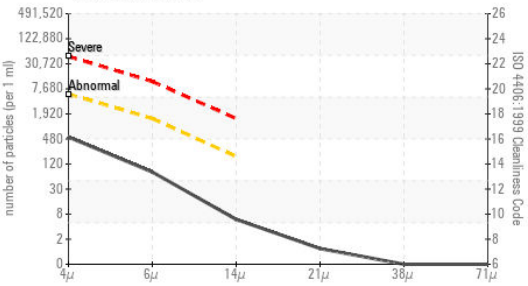
FLUID CLEANLINESS		method	limit/base	current	history1	history2
Particles >4µm		ASTM D7647	>5000	**469**	305	1437
Particles >6µm		ASTM D7647	>1300	**68**	132	349
Particles >14µm		ASTM D7647	>160	**5**	17	30
Particles >21µm		ASTM D7647	>40	**1**	4	7
Particles >38µm		ASTM D7647	>10	**0**	1	0
Particles >71µm		ASTM D7647	>3	**0**	0	0
Oil Cleanliness		ISO 4406 (c)	>19/17/14	**16/13/10**	15/14/11	18/16/12

OIL ANALYSIS REPORT

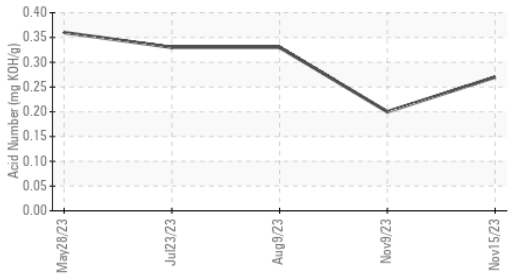
Varnish Potential



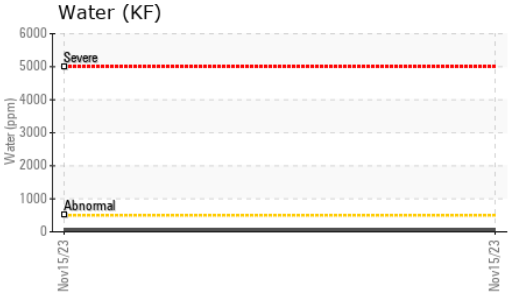
Particle Count



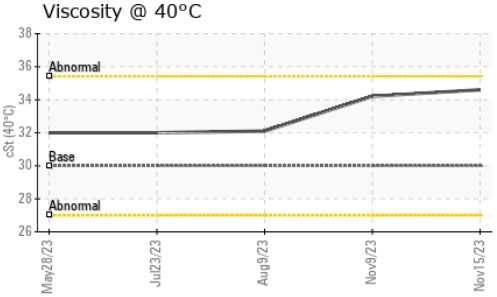
Acid Number



Water (KF)



Viscosity @ 40°C



FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045		**0.27**	0.20	0.33
Anti-Oxidant 1	%	ASTM D6971	<25	**100**	---	---
Anti-Oxidant 2	%	ASTM D6971	<25	**78**	---	---
MPC Varnish Potential	Scale	ASTM D7843	>15	**3**	---	---

VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Precipitate	scalar	*Visual	NONE	**NONE**	NONE	NONE
Silt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Debris	scalar	*Visual	NONE	**NONE**	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Appearance	scalar	*Visual	NORML	**NORML**	NORML	NORML
Odor	scalar	*Visual	NORML	**NORML**	NORML	NORML
Emulsified Water	scalar	*Visual	>0.05	**NEG**	NEG	NEG
Free Water	scalar	*Visual		**NEG**	NEG	NEG

FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	30	**34.6**	34.21	32.1
Visc @ 100°C	cSt	ASTM D445	5	**---**	6.1	---
Viscosity Index (VI)	Scale	ASTM D2270	87	**---**	▲ 126	---

SAMPLE IMAGES	method	limit/base	current	history1	history2
Color					
Bottom					
MPC				*no image*	*no image*

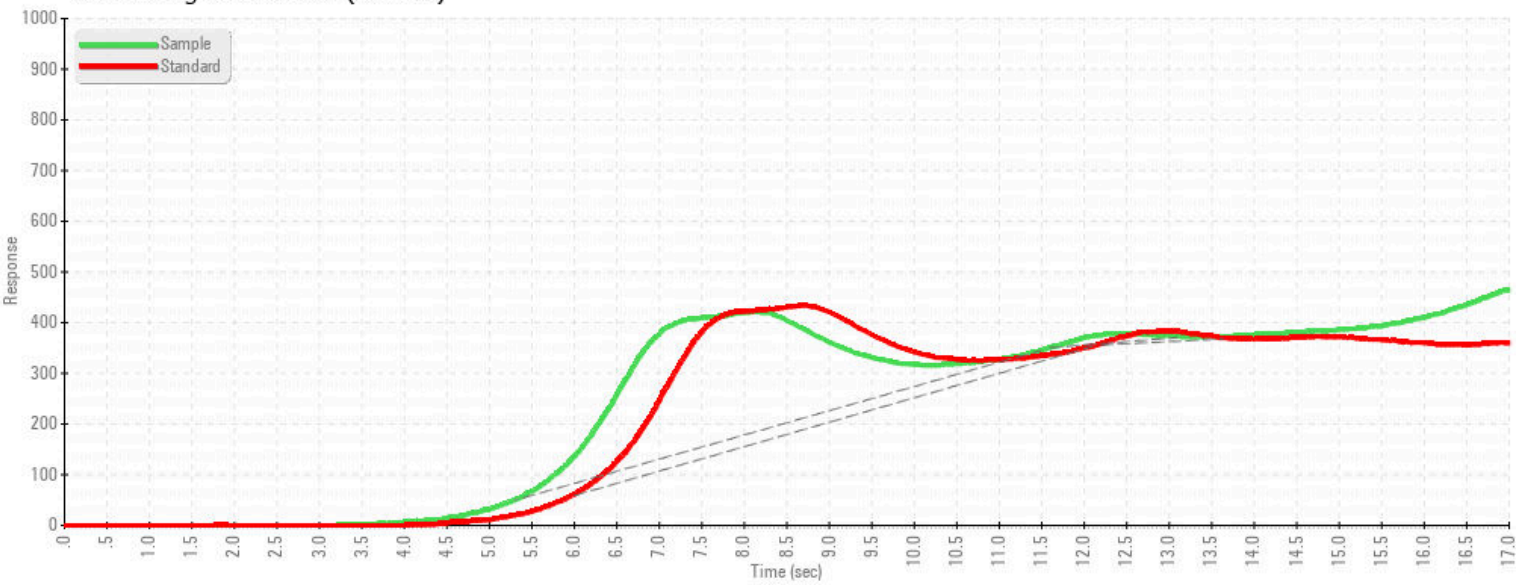
ANAB ACCREDITED ISO/IEC 17025 TESTING LABORATORY
Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0846258 **Received** : 16 Nov 2023
Lab Number : 06009633 **Diagnosed** : 30 Nov 2023
Unique Number : 10743395 **Diagnostician** : Doug Bogart
Test Package : AOM 1 (Additional Tests: KF)

To discuss this sample report, contact Customer Service at 1-800-237-1369.
** - Denotes test methods that are outside of the ISO 17025 scope of accreditation.*
Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

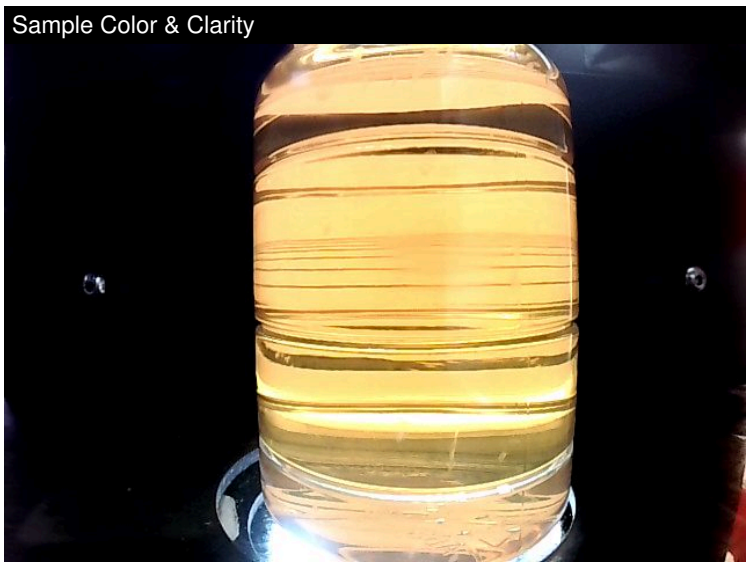
MERCK & COMPANY
5325 OLD OXFORD RD
DURHAM, NC
US 27712
Contact: Mark Montalvo
mark_montalvo@merck.com
T: (919)884-4103
F:

Remaining Useful Life (RULER)



MPC (Varnish Test)

Sample Color & Clarity



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